ABSTRACT:

In one example embodiment of the present invention, a method of migrating an input seismic data point having an input source location and an input receiver location, and an image location associated therewith is provided. The method comprises

5 determining a pseudo-offset and mapping the seismic data point to the image location based at least in part on the pseudo-offset.

In a further example embodiment of the present invention, a method of migration of a seismic data point having an input source location, an input receiver location, and a scatter point associated therewith is provided. The method comprises determining a

10 projected source location and determining a projected receiver location. The method further comprises mapping the seismic data point from the input travel time to a projected travel time. The method further comprises determining a pseudo-offset based at least in part on the projected travel time, and mapping the data point to the pseudo-offset.

In an even further example embodiment of the present invention, a method of

15 performing velocity analysis on a seismic gather is provided. The method comprises computing a moveout travel time based on an initial model and computing an intermediate travel time. The method further comprises mapping the gather from the moveout travel time to the intermediate travel time, and scanning for velocities based on the intermediate travel time.